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(71) Applicant
BCL Limited (United Kingdom),
Bath Road, Bridgwater, Somerset TA6 4PA

(72) Inventor
Nicholas Garstang Cave Bradstock

(74) Agent and/or Address for Service
Boulton Wade & Tennant,
27 Fumival Street, London EC4A 1PQ,

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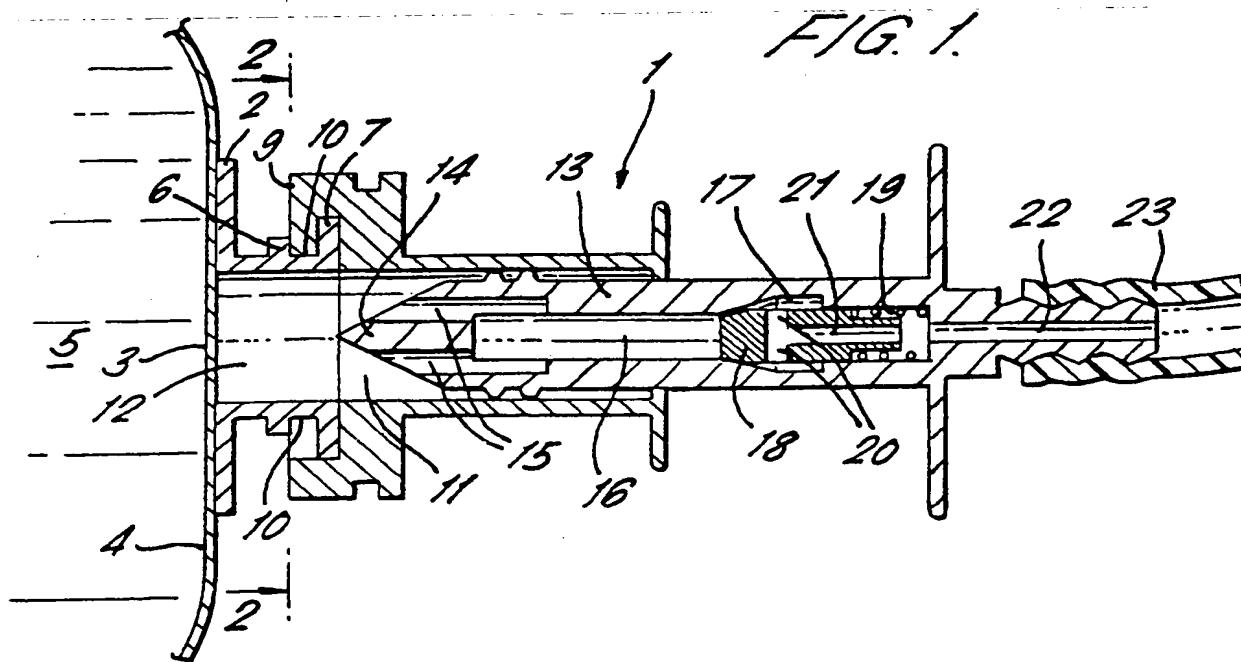
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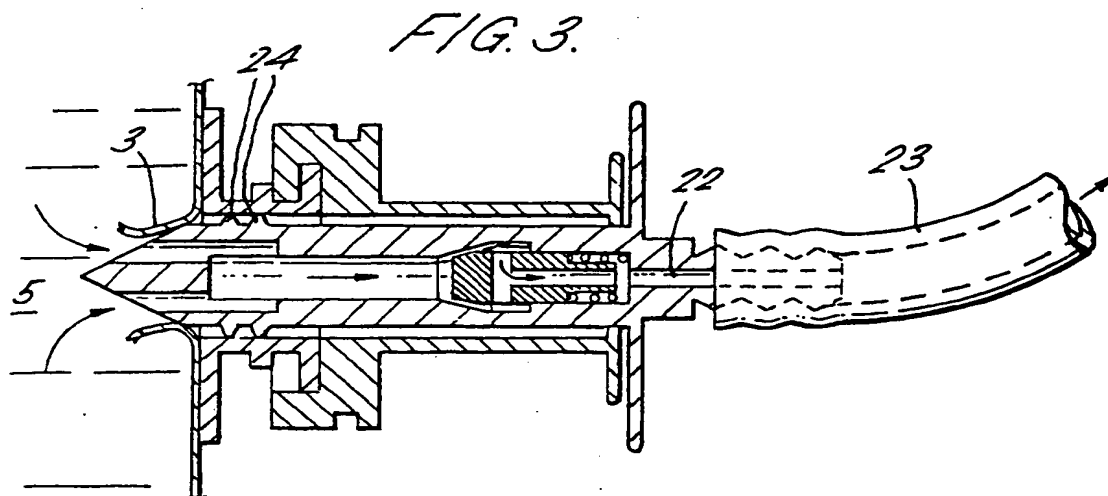
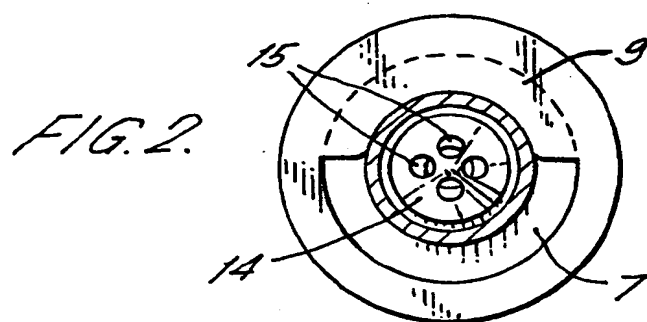
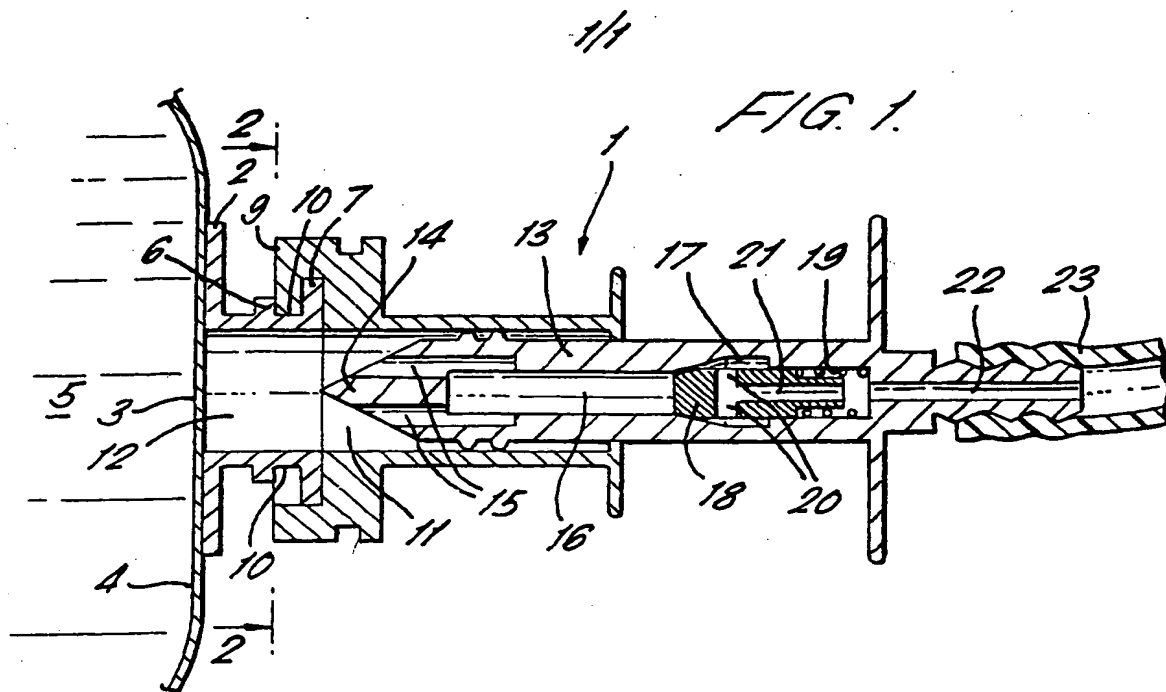
(54) Liquid container tapping device

(57) A tapping device for fitting on to the flanged outlet 2 of a "bag-in-box" 5 comprises a frame member having a hook means 9 for engaging the flange 7 on the gland so holding the member in line with the outlet of the gland and a tapping member 13 slidable within the frame member and comprising a piercing head 14 for piercing the diaphragm 3 which head has an opening or openings 15 for the outflow of liquid from the package and channel means 16 for conducting the liquid under suction to a dispensing means. The channel means is preferably fitted with a non-return valve 18.



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SPECIFICATION

Liquid container tapping device

5 This invention is concerned with a liquid container tapping device. It is now common practice to package liquids, particularly liquids susceptible to spoilage on contact with air, for example wine, fruit juices, etc. in plastic film bags retained within a rigid supporting container, for example, a cardboard box, together generally known as "bag-in-box". The advantage of such containers is that as the liquid is dispensed or drawn from the bag, the bag collapses and thus there is no necessity to introduce air into the bag to take up the space left by the withdrawn liquid.

10 In one system, the bag is fitted with a flanged outlet, known as a gland, having on its inner end a frangible diaphragm which positively seals the contents of the bag against leakage and contact with the atmosphere. When it is required to disperse the contents of the bag, a tap, fitted with a diaphragm rupturing member, is pushed home into the gland where it becomes firmly seated and the liquid contents can be dispensed, by gravity, as needed.

15 Although such "bag-in-box" containers are used widely for dispensing wines, cider and like liquids in bars, the operation of turning the tap waiting for the liquid to flow by gravity and turning off the tap for each dispensing operation is tedious and time consuming when business is brisk. Further, it is not always convenient to have the containers placed at bar level ready to hand for dispensing the liquids. For this reason, there is now a tendency to turn to the conventional method of drawing the liquids from the "bag-in-box" containers by a hand suction pump of the "beer-engine" type. The container can then be of any convenient size; it can be located at floor level and the rate of flow can readily be determined by the pumping action.

20 For reasons of economy it is convenient for the bags of the containers to be fitted with a single gland which can be fitted either with a tap or with a tapping device for connection to a suction pump or other drawing-off means.

25 The present invention is concerned with a tapping device for fitting to a frangible diaphragm sealed gland of a "bag-in-box" container.

30 According to the present invention a tapping device for fitting to a frangible diaphragm sealed gland of a liquid container comprises an elongated frame member having at one end an attachment means for attaching the frame member to a flange on the gland and a tapping member slidably fitted to the frame member and capable of being urged in the direction of the attachment means, the tapping member having a piercing head for rupturing the diaphragm, an opening in the head for

the outflow of liquid from the container, a seal behind the opening for sealing the head within the gland and channel means for conducting the liquid away from the head.

70 The frame member conveniently is of tubular form with the tapping member slidably mounted therein. The piercing head may be pointed, chisel shaped or angled chisel shaped to ensure a smooth rupturing of the diaphragm and there are preferably two or more openings in the head to ensure free outflow of the liquid into the conduit.

75 In a preferred form of the invention a one way valve is fitted within the channel means to prevent a reverse flow of liquid back to the container. The one way valve may be a spring urged conical surfaced shuttle seated against a complementary surface or a spring urged ball.

80 The tapping device is particularly of use in the dispensing of liquids from "bag-in-box" liquid containers although it can be used for tapping any form of liquid containers including rigid structures provided that they are fitted with the appropriate gland.

85 A tapping device constructed in accordance with the invention is now specifically described with reference to the accompanying drawings, in which

90 Figure 1 is a front elevation in section of the device fitted to a gland but before operation of the device

95 Figure 2 is a section of Figure 1 through 2 ... 2

100 Figure 3 is a front elevation as in Figure 1 but after operation of the device. In Figure 1 the tapping device shown generally at 1 is shown attached to a gland 2 having a frangible sealing diaphragm 3. The gland 2 is sealed to a flexible bag wall 4 of a "bag-in-box" package containing a liquid 5 for example wine such that a portion of the wall 4 becomes the diaphragm 3.

105 The gland 2 has at least two flanges 6, 7 which are used as an anchorage for a tap (not shown) which may conventionally be fitted to the gland 2.

110 In accordance with the invention a frame member 8 of the device 1 has at one end a semi-circular hook member 9 which fits into a groove 10 formed between the flanges 6, 7 (see Figure 2) over the upper part of the gland 2. The member 9 holds the frame member 8 firmly in contact with the gland 2 and ensures that a bore 11 of the member 8 is in line with the bore 12 of the gland 2. Lying within the bore 11 of the member 8 is a tapping member 13 having a sharpened end 14 around which are distributed four longitudinal channels 15 which communicate with a central channel 16.

115 At the end remote from the channel 15, the channel 16 diverges outwardly to form a chamber 17 in which lies a shuttle shaped valve 18 having a conical head corresponding

with the divergent wall of the chamber 17 against which it is urged by a spring 19 so as normally to close off the channel 16. The valve 18 has openings 20 formed in the body

5 which communicate with the chamber 17 and with a middle channel 21. The channel 21 opens from the rear of the valve 18 into an outlet conduit 22 which in turn is fitted with a flexible pipe 23.

10 In a tapping operation, the tapping member 13 is forced by hand towards the diaphragm 3 causing the end 14 to pierce and rupture the diaphragm 3. The forward movement of the member 13 is halted when the end 14 fully protrudes through the wall 4 and seals

15 24 on the end 14 forms a liquid seal with the bore 12 of the gland 2. Liquid 5 can then run from the package through the channel 15 into the channel 16 where it is stopped by the

20 valve 18.

On applying suction to the conduit 22 by way of a pump (for example a "beer engine") the pressure of the spring 19 is overcome, the valve 18 opens and liquid 5 is then drawn

25 into the chamber 17 through the openings 20, the channel 21, the conduit 22 and the pipe 23 to a dispensing outlet (not shown). On discontinuing the suction, the valve 18 returns to its normal position, cutting off the

30 supply of liquid 5 and preventing reverse flow of the liquid 5 to the bulk source in the package.

Although the gland 2 as described is fixed to the wall 4 so that a portion of the wall 4 becomes a frangible diaphragm, the gland

35 may be previously fitted with a frangible diaphragm and then is sealed over an opening previously formed in the wall 4. Further the valve 18 may be replaced by a ball valve

40 urged into its seat by spring pressure.

CLAIMS

1. A tapping device for fitting a frangible diaphragm sealed gland of a liquid container

45 comprising an elongated frame member having at one end an attachment means for attaching the frame member to a flange on the gland and a tapping member slidably fitted to the frame member and capable of

50 being urged in the direction of the attachment means, the tapping member having a piercing head for rupturing the diaphragm, an opening in the head for the outflow of liquid from the container, a seal behind the opening for seal-

55 ing the head within the gland and channel means for conducting the liquid away from the head.

2. A device as claimed in claim 1 in which a one way valve is fitted within the channel

60 means.

3. A device as claimed in claim 2 in which the valve is a spring urged conical surfaced shuttle or a spring urged ball

4. A device as claimed in any one of the

65 claims 1, 2 or 3 in which the piercing head is

pointed, chisel shaped or angled chisel shaped.

5. A device as claimed in any one of the preceding claims in which the attachment

70 means is a semi-circular hook which fits over the upper part of the flange.

6. A device as claimed in claim 1 substantially as described with reference to the accompanying drawings.

7. A device as claimed in any one of the preceding claims, which device is fitted to a container, such as "bag-in-box" container,

75 with the tapping member of the device having ruptured a frangible diaphragm sealed gland of the container and having formed a liquid

80 seal with said gland, whereby liquid can be drawn from the container on the application of suction to the channel means of the device.

8. A method of drawing liquid from the

85 container and the device as claimed in claim 7, wherein suction is applied to the said channel means and liquid is drawn from the container through the device along the channel means.

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